



SHORT REPORT

Cephalic Vein Graft Aneurysm — A Rare Presentation

A. Nicolson*, M. Claridge, M. Simms, A. Edwards



[Metadata, citation and similar papers at core.ac](#)

Provided by Elsevier - Publisher Connector

Submitted 17 April 2009; accepted 8 September 2009

KEYWORDS

Venous aneurysms;
Cephalic vein;
Graft aneurysms;
Infra-inguinal bypass;
Complication

Abstract We report a case of a non-anastomotic true aneurysm in an arterialized cephalic vein. This presented as a deep venous thrombosis due to local compression, 11 years after the cephalic vein had been used to revise a previous femoro-distal bypass. He had 3 further aneurysms, aortic and peripheral. The cephalic vein aneurysm was successfully repaired using a remnant of saphenous vein from the lower leg. This unique presentation suggests the importance of long-term surveillance in infra-inguinal bypass surgery in patients with systemic aneurysmal disease.

© 2009 European Society for Vascular Surgery. Published by Elsevier Ltd.

Open access under [CC BY-NC-ND license](#).

Introduction

Autologous vein is the best conduit for infra-inguinal bypass surgery (IIBS) in the treatment of peripheral arterial disease (PAD), with excellent tissue acceptance and good functional results. The major late complication is graft failure from disease progression.

True aneurysm formation of autologous cephalic vein grafts is a rare late complication, with fifteen reports in the literature over the last thirty years. It seems likely that more than one factor is implicated in aneurysm formation as atherosclerosis affects 30–50% of arterialized veins primarily causing stenosis, not dilatation.¹ Presentation is usually a painless, rapidly expanding pulsatile mass.

Complications include numbness and pressure necrosis of the skin, acute graft thrombosis and distal embolism.

We present a case of true aneurysm formation in an eleven-year-old cephalic vein graft.

Report

The subject is an 81-year-old male, who underwent an aorto-femoral bypass and bilateral femoro-distal bypass twelve years ago, using long saphenous vein (LSV). The left femoro-distal bypass was subsequently revised using cephalic vein eleven years ago, due to stenosis not amenable to angioplasty. His past medical history includes hypertension, vertigo and right total knee replacement.

Serial follow-up by clinical examination and ultrasound demonstrated a well functioning graft. He was discharged from follow-up after three years. In 2007 he presented with a false aneurysm at the femoral anastomosis and a distal cephalic vein graft aneurysm. He was kept under surveillance, as he was too frail to undergo revision surgery due to his age and co-existing morbidities.

DOI of original article: 10.1016/j.ejvs.2009.09.016.

* Corresponding author. University Hospital Birmingham, Selly Oak Vascular Department 'S block', Raddlebarn Road, Selly Oak, Birmingham B29 6JD, England, UK. Tel.: +44 121 627 8534; fax: +44 121 627 8691.

E-mail address: anna.nicolson@uhb.nhs.uk (A. Nicolson).

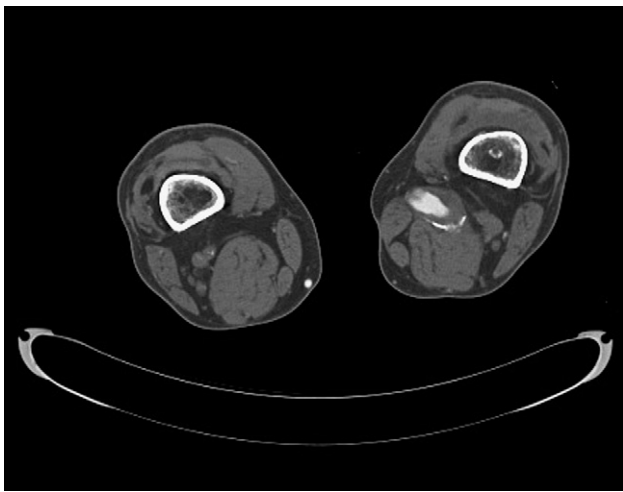


Figure 1 A CT angiogram showed a true aneurysm of the distal cephalic vein bypass, with popliteal vein compression, causing thrombosis. The aneurysm itself was not thrombosed (See Fig. 1).

One year later he presented as an emergency with sudden onset left calf pain and swelling. On examination, he had a swollen tender left calf and non-threatening ischaemia of the foot. All peripheral pulses were palpable on the right side. On the left, only aneurysmal femoral and graft pulses were palpated.

A CT angiogram demonstrated a true aneurysm of the distal cephalic vein bypass, with popliteal vein compression, causing thrombosis. The aneurysm itself was not thrombosed. (See Fig. 1)

The subject was also found to have a 5.4 cm abdominal aortic aneurysm and a 3.5 cm right common iliac aneurysm, as well as the false left femoral aneurysm.

A reconstructed CT angiogram, demonstrating his abdominal, right common iliac, left femoral and left distal vein graft aneurysms. (See Fig. 2)

At surgery the remnant of the right LSV at calf level was used to bypass the aneurysm from the adductor hiatus to the interosseous membrane. He made a full recovery and was discharged home four days later, on warfarin. He had a subsequent admission four days after discharge with a wound infection.

This subject has now been enrolled in the screening programme for follow-up of his aneurysms. In addition, he has had a further jump graft to the distal peroneal artery using cephalic vein as a result of stenosis developing in the recent LSV extension.

Discussion

Surveillance of vein graft aneurysms suggest a propensity to enlarge and become symptomatic, even rupture, making surgical intervention the treatment of choice. Our subject presented with a DVT secondary to local compression from the vein graft aneurysm. This presentation has not been previously described in the literature.

Majeski reported three true aneurysms in a series of 207 in situ saphenous femoro-popliteal bypass operations. The mean time from surgery to clinical manifestation of

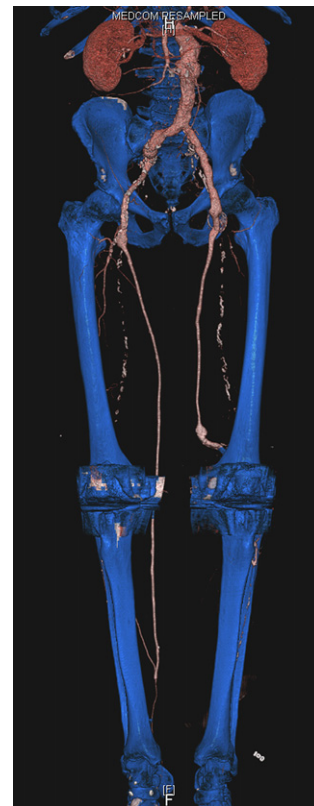


Figure 2 A reconstructed CT angiogram, demonstrating his abdominal, right common iliac, left femoral and left distal vein graft aneurysms (See Fig. 2).

a venous aneurysm was seven years. Our patient showed a longer lead-time of eleven years before presentation, although up to twenty-two years has been described.² The majority of aneurysms described have been in autologous LSV grafts, either reversed or in situ. This is perhaps not surprising as LSV is the most commonly used conduit.

Most of the reported cephalic vein series do not comment specifically on aneurysm formation in their outcome measures. Overall there are fifteen cases reported in the literature. Two reports of cephalic vein demonstrating aneurysmal degeneration after revision surgery for LSV graft aneurysm and graft thrombosis are described.^{3,4} They were resected and replaced with autogenous cephalic vein. The former subsequently presented with acute rupture five months post surgery.⁴

It has been suggested that aneurysmal degeneration of a vein graft is a manifestation of a systemic predisposition toward aneurysm formation. Loftus et al. demonstrated that only one factor, the presence of a popliteal aneurysm, had a significant effect on the development of vein graft aneurysms, with a relative risk of 22.7 times that of patients with occlusive disease.⁵ Although this gentleman's original surgery was for occlusive disease, he also has extensive aneurysmal disease.

Conclusion

This case report is a unique presentation of autologous non-anastomotic true cephalic vein graft aneurysm

causing deep venous thrombosis, which has not been previously reported in the world literature. Autologous vein graft aneurysms show a strong tendency to complication, making surgery the treatment of choice. We suggest lifelong follow-up of *all* patients with co-existing systemic aneurysmal disease and autologous vein grafts, whether cephalic or LSV.

Conflict of Interest/Funding

None.

References

- 1 Cassina PC, Hailemariam S, Schmid RA, Hauser M. Infrainguinal aneurysm formation in arterialized autologous saphenous vein grafts. *J Vasc Surg* 1998;**28**:944–8.
- 2 Majeski J. Replacement of in situ saphenous venous aneurysms with arterial autografts. *Am J Vasc Surg* 2004;**188**:168–70.
- 3 Denton MJ, McCowan A, Scott DF. True aneurysm formation in femoropopliteal autogenous vein bypass grafts: two cases. *ANZ J Surg* 1983;**53**(4):317–20.
- 4 Deweese JA. Aneurysms of venous bypass grafts in the lower extremities. *J Cardiovasc Surg* 1975;**5**:271–3.
- 5 Loftus IM, McCarthy MJ, Lloyd A, Naylor AR, Bell PRF, Thompson MM. Prevalence of true vein graft aneurysms: Implications for aneurysm pathogenesis. *J Vasc Surg* 1999;**29**:403–8.